



Chunghwa Picture Tubes, Ltd.

Technical Specification

To :
Date : 2004.07.08

CPT TFT-LCD

CLAA320WA01

ACCEPTED BY :

TENTATIVE

APPROVED BY	CHECKED BY	PREPARED BY
		TFT-LCD Product Planning Management General Division

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RECORD OF REVISIONS

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1. Overview

CLAA320WA11 is 31.51" color TFT-LCD (Thin Film Transistor Liquid Crystal Display) module composed of LCD Panel, Driver ICs, Control Circuit Board, Backlight and Inverter. By applying 8 bit digital data, 1366×768, 16.7M-color images are displayed on the 31.51" diagonal screen. Input power voltage is 12.0V for LCD driving and 24.0V for Inverter. Interface of data and control signals is LVDS.

*Features

- High Contrast Ratio ,High Luminous.
- Wide viewing angle($\pm 170^\circ$).
- PMVA(Premium Multi-Domain Vertical Align) Mode.
- WXGA(1366x768pixels) Resolution(16:9).
- Slim Type.
- Fast Response Time.
- Direct Type 16CCFL.
- LVDS Interface.
- Low Power Consumption.
- High Definition TV.

* General information

Items	Specifications
Display Area(mm)	697.68(H) × 392.25(V) (31.51 inch diagonal)
Number of Pixels	1366(H) × 768(V)
Pixel Pitch(mm)	0.51075(H) × 0.51075(V)
Color Pixel Arrangement	RGB vertical strip
Display Mode	Normally Black
Number of Colors	16.7M (8bits/color)
Surface Treatment	Hard coating : 3H , Anti-reflective coating <less than 1.5% reflection.
Total Module Power(W)	(110)W

* Mechanical information

Items			Min	Type.	Max.	Note
Module Size	Horizontal(H)		742.0	743.0	744.0	mm
	Vertical(V)		426.0	447.0	448.0	mm
	Depth(D)	no inverter	41.0	42.0	43.0	mm
		with inverter	43.0	44.0	45.0	mm
Module Weight(g)			--	--	8300	g

2.Optical Characteristics

Ta = 25°C, VCC=5

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Contrast Ratio		CR	$\theta = \phi = 0^\circ$	600	800	--	-
Luminance	Center	Lw	$\theta = \phi = 0^\circ$	500	550	--	cd/m ²
	Uniformity	Lw	$\theta = \phi = 0^\circ$	--	72	--	%
Response Time (Gray to Gray)		G-G	$\theta = \phi = 0^\circ$	--	8	--	ms
Color Temperature		K	--	--	10000	--	K
Gamma		r	--	2.0	2.2	2.4	--
Viewing Angle	Horizontal		CR 10	--	-85~85	--	°
	Vertical			--	-85~85	--	°

3. Inerface Connections

This LCD employs Two interface connections,a 30pin connector is used for the module electronics and a 14pin Connector is used for the integral backlight system.

3.1 LCD Module

LCD Connector (CN1) : FI-X30SSL-HF(JAE) or equivalent

Pin	Symbol	Function	Pin	Symbol	Function
1	VCC	Power supply,+12V	16	GND	Ground
2	VCC	Power supply,+12V	17	RxIN3-	Data-
3	GND	Ground	18	RxIN3+	Data+
4	GND	Ground	19	GND	Ground
5	RxIN0-	Data-	20	N.C	--
6	RxIN0+	Data+	21	N.C	--
7	GND	Ground	22	N.C	--
8	RxIN1-	Data-	23	N.C	--
9	RxIN1+	Data+	24	N.C	--
10	GND	Ground	25	N.C	--
11	RxIN2-	Data-	26	N.C	Vcom
12	RxIN2+	Data+	27	DMS	LVDS Receiver
13	GND	Ground	28	GND	Ground
14	RxCLKIN-	Clock-	29	GND	Ground
15	RxCLKIN+	Clock+	30	GND	Ground

Note : 1.LVDS Option Pin (DMS) : If this pin:High (3.3V) JEIDA LVDS format ;
Otherwise low (GND) No-JEIDA LVDS format

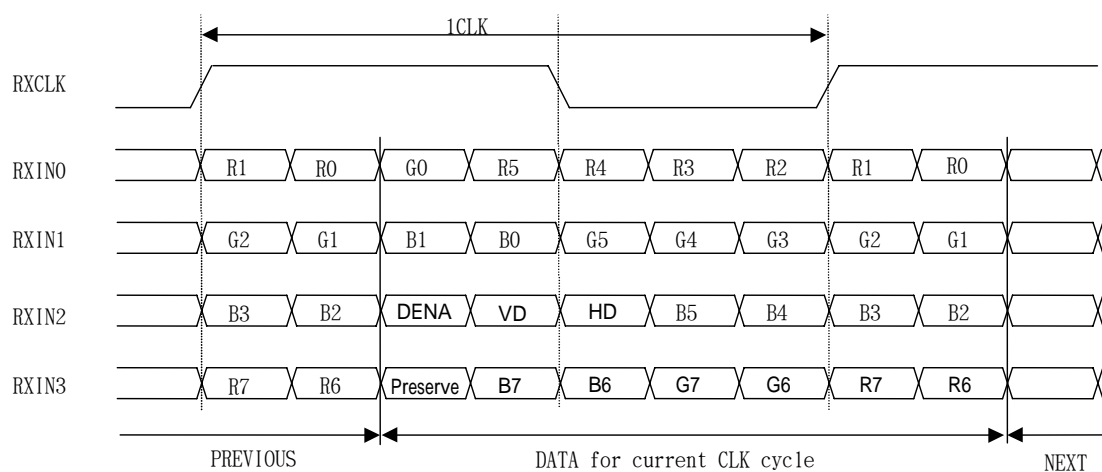
2.It must be connected to High or Low, and it can't be NC.

3.2 LVDS interface

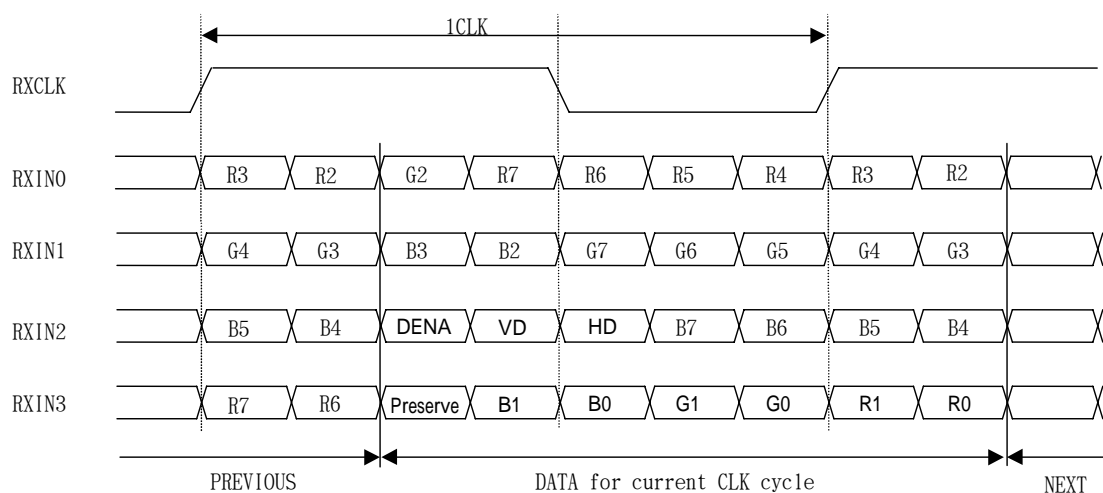
- LVDS Receiver :Tcon (LVDS Rx merged)
- Pixel data (single data)
- Available JEIDA or Normal DATA(by option on Control PCB)

	LVDS pin	JEIDA-DATA	Normal DATA
TxOUT/RxIN0	TxIN/RxOUT0	R2	R0
	TxIN/RxOUT1	R3	R1
	TxIN/RxOUT2	R4	R2
	TxIN/RxOUT3	R5	R3
	TxIN/RxOUT4	R6	R4
	TxIN/RxOUT6	R7	R5
	TxIN/RxOUT7	G2	G0
TxOUT/RxIN1	TxIN/RxOUT8	G3	G1
	TxIN/RxOUT9	G4	G2
	TxIN/RxOUT12	G5	G3
	TxIN/RxOUT13	G6	G4
	TxIN/RxOUT14	G7	G5
	TxIN/RxOUT15	B2	B0
	TxIN/RxOUT18	B3	B1
TxOUT/RxIN2	TxIN/RxOUT19	B4	B2
	TxIN/RxOUT20	B5	B3
	TxIN/RxOUT21	B6	B4
	TxIN/RxOUT22	B7	B5
	TxIN/RxOUT24	HSYNC	HSYNC
	TxIN/RxOUT25	VSYNC	VSYNC
	TxIN/RxOUT26	DENA	DENA
TxOUT/RxIN3	TxIN/RxOUT27	R0	R6
	TxIN/RxOUT5	R1	R7
	TxIN/RxOUT10	G0	G6
	TxIN/RxOUT11	G1	G7
	TxIN/RxOUT16	B0	B6
	TxIN/RxOUT17	B1	B7
	TxIN/RxOUT23	RESERVED	RESERVED

-Required Signal Assignment for LVDS Transmitter (**No-JEIDA normal**)



-Required Signal Assignment for LVDS Transmitter (**JEIDA**)



3.3 Backlight Inverter

Inverter connector: PHR-14(JST)

Pin No	Signal name	Feature
1	Vcc	Supply Voltage 24V
2	Vcc	Supply Voltage 24V
3	Vcc	Supply Voltage 24V
4	Vcc	Supply Voltage 24V
5	Vcc	Supply Voltage 24V
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	GND	Ground
10	GND	Ground
11	NC	NC
12	ON/OFF	ON/OFF Control
13	PWM	PWM Dimming/5V Max Lum
14	GND	Ground

[Note] : 1.ON/OFF control : ON=5V OFF=0V
 2. PWM Dimming : MAX=5V ,MIN=0V

3.4 SignalTiming Specifications (DE only mode)

Item	Symbol		Min	Typ	Max	Unit
DCLK	Frequency	f_{CLK}	TBD	80	TBD	MHz
	Period	t_{CLK}	TBD	12.5	TBD	ns
Horizontal	Line Rate	f_H	TBD	48	TBD	kHz
	Horizontal Total Time	t_H	TBD	1648	TBD	t_{CLK}
	Horizontal Active Time	t_{HA}	TBD	1366	TBD	t_{CLK}
	Horizontal Blank Time	t_{HB}	TBD	282	TBD	t_{CLK}
	Horizontal Front Porch	t_{HFP}				
	Horizontal Back Porch					
Vertical	Frame Rate	Fr	TBD	60	TBD	Hz
	Vertical Total Time	t_V	TBD	810	TBD	t_H
	Vertical Active Time	t_{VA}	TBD	768	TBD	t_H
	Vertical Blank Time	t_{VB}	TBD	42	TBD	t_H
	Vertical Front Porch					
	Vertical Back Porch					

Note) This product is DE only mode. The input of Hsync and Vsync signal does not have an effect on normal operation.

4.1 Front **side** (Tolerance is $\pm 1.0\text{mm}$ unless noted)

Dimension is $\pm 1.0\text{mm}$ unless noted)

The diagram shows a cross-section of a PCB assembly. Dimensions are indicated as follows:

- Top layer thickness: 1.8 ± 0.5
- Bottom layer thickness: 52 ± 0.5
- Distance from bottom layer to component: 97.5 ± 0.5
- Distance between components: 97.5 ± 0.5
- Distance from component to edge: 97.5 ± 0.5
- Distance from edge to edge: 52 ± 0.5
- Angle of the top layer: $4-14 \text{ DP } 7.5\text{mm MAX}$



Rear side (Tolerance is $\pm 1.0\text{mm}$ unless noted)

[Unit: mm]

